

REMARKS

Claims 1-6, 8-30, 52 and 53 were previously pending in this application. No claims are currently amended, added or cancelled. As a result, claims 1-6, 8-30, 52 and 53 are pending for examination with claims 1, being the sole independent claim. No new matter has been added.

Objections to the Drawings

On page 3 the Office Action objected to FIGS. 3 and 4 because monitor 406 of FIG. 4 and monitor 304 of FIG 3 are given the same name making it unclear whether they are the same component. In response, applicant has amended the specification to refer to component 304 consistently as “battery monitor 304” and component 406 as “monitor 406.”

On page 4 the Office Action objected to FIGS. 3 and 4 on the basis that it is allegedly unclear where FIG. 4 fits into the rest of the circuit of FIG. 3 and because FIG. 4 allegedly has a number of inputs and outputs unable to be matched to the other circuits. Applicant respectfully disagrees that it is unclear where FIG. 4 fits into the rest of the circuit of FIG. 3 and that FIG. 4 has a number of inputs and outputs unable to be matched to the other circuits. As described in paragraphs 0058 - 0062, monitor 406 is an external monitor that may monitor one or more individual battery modules such as battery module 301. Paragraph 0058 has been amended to clarify this. Paragraph 0060, reproduced above, explains that interfaces 407A –N of monitor 406 may be connected to interfaces 303 of battery modules 301.

On page 4, the Office Action objected to FIGS. 4 and 5 on the basis that it is allegedly unclear whether component 403 of FIG. 4 is the same component as component 501 of FIG. 5. The Office Action further alleges that it is unclear where line 506 is coming from. Applicant respectfully disagrees that it is unclear whether component 403 of FIG. 4 is the same component as component 501 of FIG. 5. As stated in paragraph 0063 (as corrected above), interface circuit 501 is one possible implementation of monitor 406. The inputs and outputs do not match because circuit 501 is a different embodiment than monitor 406. Interfaces 508A – 508N of FIG. 5 in one embodiment correspond to interfaces 407A – 407N of FIG. 4. In another embodiment, interfaces 508A-508N may receive input signals from the batter modules while data may be sent to the battery modules along line 506.

Accordingly, withdrawal of the objections to the drawings is respectfully requested.

Rejections Under 35 U.S.C. § 102

The Office Action rejected claims 1, 8, 14, 15, 20-23, 26, and 53 under 35 U.S.C. § 102(b) as being anticipated by Downs, et al., U.S. Publication No. 2001/0009361 (hereinafter “Downs”). Applicant respectfully traverses the rejection as outlined below.

The Disclosure of Downs

Downs is directed to a method for monitoring a rechargeable battery (Abstract). Downs discloses a battery pack 100 that monitors a battery using a battery monitoring circuit 102 (Downs at FIG. 1 and Paragraph 0017). The battery monitoring circuit can receive power over a one-wire data bus connected to input pin DQ (Downs at Paragraph 0017). The battery monitoring circuit “steals” power when the signal at the DQ I/O is high (Downs at Paragraph 0017).

Claims 1, 8, 14, 15, 20-23, 26, and 53 patentably distinguish over Downs

Applicant respectfully disagrees that claims 1, 8, 14, 15, 20-23, 26, and 53 are anticipated by Downs.

Independent claim 1 is directed to a battery having an apparatus for monitoring the battery. The battery comprises one or more cells that provide power to at least one output and a monitor that is adapted to monitor and store performance information relating to the operation of the one or more cells. The monitor is adapted to communicate with an external system, and is adapted to receive a monitor signal from the external system. The monitor is coupled to the one or more cells and is adapted to receive power for the monitor from the external system. The monitor is adapted to communicate with the external system by interrupting current of the received power provided by the external system.

With regard to independent claim 1, on page 6, the Office Action asserts that Downs discloses a monitor that is adapted to monitor and store performance information relating to the operation of the one or more cells and which is adapted to communicate with an external system (Registers 130, 132, 134, 136, 138). However, registers 130, 132, 134, 136, and 138 are not part of any external system. Registers 130, 132, 134, 136, and 138 are disclosed by Downs as a part of monitor 102, not part of any system external to monitor 102 (Downs at FIG. 1 and Paragraph 0014 “[B]attery monitoring circuitry 102 includes . . . a temperature register 130; battery voltage

register 132; battery current register 134; clock register 136; disconnect registers 138.”) Thus, Downs fails to disclose a monitor that is adapted to monitor and store performance information relating to the operation of the one or more cells and which is adapted to communicate with an external system as recited in independent claim 1.

The Office Action on page 6 also asserts that Downs discloses that the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system. However, the portion of Downs which the Examiner seems to rely on for this proposition simply reads “[S]erial numbers stored in memory can be read in the absence of normal power, such as when battery cells 154 are completely discharged.” (Downs at Paragraph 0017). Nowhere does Downs disclose that power may be interrupted by the monitor. A disclosure of a monitor including a memory that may be read from in the absence of normal power in no way discloses a monitor adapted to communicate with the external system by interrupting current of received power provided by the external system as recited in independent claim 1. Downs discloses that power may fail due to discharge of battery cells 154, but nowhere discloses that the monitor 102 may initiate an interruption of current of received power provided by the external system. Thus, Downs fails to disclose a monitor adapted to communicate with the external system by interrupting current of received power provided by the external system as recited in independent claim 1.

Accordingly, because Downs does not disclose all of the elements of independent claim 1, withdrawal of the rejection of independent claim 1 under 35 U.S.C. § 102 as anticipated by Downs is respectfully requested.

Dependent claims 8, 14, 15, 20-23, 26, and 53 depend either directly or indirectly from independent claim 1 and are patentable over Downs for at least the same reasons as independent claim 1. Further, dependent claims 8, 14, 15, 20-23, 26, and 53 are patentable over Downs for additional reasons.

For example, dependent claim 53 recites a monitor adapted to store manufacturing information relating to the battery. Dependent claim 14 recites that this manufacturing information includes a model number of the battery, dependent claim 15 recites that this manufacturing information includes a serial number of the battery, dependent claim 20 recites that this manufacturing information includes one or more constants relating to a temperature sensor of the battery, and dependent claim 21 recites that this manufacturing information

includes parameters related to a resistor used to detect current provided by the battery. The Office Action asserts on page 7 that Downs discloses a monitor adapted to store manufacturing information relating to the battery. However, the portion of Downs apparently relied on to support this assertion simply reads “the use of the 64-bit serial number and single-wire control 110 allows the tagging of rechargeable battery pack 100 with a unique serial number such that multiple battery pack monitors could exist and be utilized on the same single-wire data bus, i.e. several battery packs could be charged/monitored by the same host system.” This section describes that a serial number may be assigned to a battery pack monitor. There is nothing in Downs that supports the assertion that this assigned serial number could have anything to do with manufacturing information related to the battery itself (the battery is component 154 in Downs, not component 100. Component 100 is the battery monitoring circuit), let alone include data such as the model number or serial number of the battery, one or more constants relating to a temperature sensor of the battery, or parameters related to a resistor used to detect current provided by the battery. The serial number disclosed by Downs as being tagged to a rechargeable battery pack 100 includes only 64-bits (8 bytes), which is unlikely to be sufficient to store manufacturing information related to a battery in addition to the serial number that may be tagged to a rechargeable battery pack 100.

Dependent claim 20 further distinguishes over Downs for similar reasons as dependent claims 53, 14, and 15 and also because dependent claim 20 recites that the battery further comprises a temperature sensor. Downs discloses a temperature sensor 114, but this temperature sensor is part of the battery monitoring circuitry 102, not battery 154. (Downs at Paragraph 0014).

Dependent claim 21 further distinguishes over Downs for similar reasons as dependent claims 53, 14, and 15 and also because dependent claim 21 recites that the battery further comprises a resistor. Downs discloses a resistor R_{sesns} , but this resistor is not part of the battery. It is external to battery 154 (Downs at FIG. 1).

Accordingly, withdrawal of the rejection of dependent claims 8, 14, 15, 20-23, 26, and 53 under 35 U.S.C. § 102 as anticipated by Downs respectfully requested.

The Office Action rejected claims 1-4 under 35 U.S.C. § 102(a) as being anticipated by Laletin et al., U.S. Publication No. 2003/0206021, (hereinafter “Laletin”). Applicant respectfully traverses the rejection as outlined below.

The Disclosure of Laletin

Laletin is directed to the testing, evaluation and control of systems incorporating electrical and electrochemical elements. A Device Under Test (DUT) comprising at least one electronic or electrochemical element is excited with a time-varying electrical signal, and a sampling means, operative synchronously with an excitation means, is employed to acquire the time-varying response of the DUT. A variety of analyses may be performed on the acquired data to determine characteristics of the DUT. (Laletin Paragraph 0002).

Laletin fails to disclose a monitor adapted to communicate with an external system by interrupting current of received power provided by the external system.

Claims 1-4 patentably distinguish over Laletin

Applicant respectfully disagrees that claims 1-4 are anticipated by Laletin.

On page 9, the Office Action asserts that Laletin discloses a “monitor (including preamplifier 30, microprocessor 40, and memory 46) . . . which is adapted to communicate with an external system (including current driver 22, input signal 21, waveform generator 48, local interface, and analog test bed).” However, Latelin does not disclose that any of these elements, except for the analog test bed, are external to tester 10 (the monitor) (Laletin at FIGS. 1A, 1B, Paragraph 0086). Specifically, current driver 22, input signal 21, and waveform generator 48 are all internal components of the monitor, and not part of any external system.

On page 9, the Office Action also asserts that the monitor is “adapted to receive power for the monitor from the external system (via the microprocessor 40) . . . which is connected to the waveform generator which produces the current interrupts.” However, nowhere does Laletin disclose any external system which provides power for the monitor via microprocessor 40. Even if power was provided through microprocessor 40 by an external system, waveform generator 48 does not produce current interrupts to this alleged input power. Waveform generator 48 is disclosed as providing a signal to DUT 12 (a battery). The state of this signal is not disclosed as having anything to do with any power supplied to tester 10 (the monitor).

On page 9, the Office Action further asserts that “the monitor 30 is adapted to communicate with the external system (22, 21, 48) by interrupting current of received power . . . provided by the external system.” However, as stated above, microprocessor 30 is not the monitor. Microprocessor 30, along with elements 22, 21, and 48 are all internal components of tester 10 (the monitor). Elements 22, 21, and 48 do not function to interrupt current of received power to the monitor provided by the external system. They simply provide a signal to DUT 12. This signal in no way controls or interrupts current of received power provided by an external system to the monitor. Indeed, if a signal from any of components 22, 21, and 48 did somehow create a current interrupt to input power to the monitor, the monitor would not be able to perform its function of monitoring the response of DUT 12 to this signal as disclosed.

Further, on page 9, the Office Action describes components 22, 21, and 48 as being an external system, but also asserts that the interruption of the current of received power is “achieved by the components 22, 21, 48 which produce the current square wave pulses.” If components 22, 21, 48 could be considered an external system, then they could not be part of a monitor “wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system” as recited in independent claim 1.

Thus, Laletin cannot anticipate a monitor adapted to receive power for the monitor from an external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system as recited in independent claim 1.

Accordingly, withdrawal of the rejection of independent claim 1 under 35 U.S.C. 102 as being anticipated by Laletin is respectfully requested.

Dependent claims 2-4 depend from independent claim 1 and are patentable over Laletin for at least the same reason as independent claim 1.

Further, dependent claim 3 is patentable over Laletin for an additional reason. The office Action on page 10 asserts that Laletin teaches that “the monitor (Differential Amplifier 54) is adapted to perform a reset . . . if the received power is insufficient.” However differential amplifier 54 is not a monitor which “is adapted to monitor and store performance information relating to the operation of the one or more cells” as recited in independent claim 1. At most, it is a single element within a monitor (tester 10). Actions of differential amplifier 54 are not

disclosed as having any impact on any alleged reset function of the monitor. Further, Laletin discloses that “[t]he output, signal 55, produced by instrumentation amplifier 54 is equal (or, if amplifier has other than unit gain, is linearly proportional) to the potential difference between the inputs of the amplifier 54.” (Laletin at Paragraph 0089). Providing a signal based upon a comparison of two input signals does not constitute a reset, even if these signals are equal, resulting in a zero voltage output. Further, a condition in which the potential difference between the inputs of the amplifier 54 are equal is not equivalent to a condition in which power supplied to the monitor is insufficient. Nowhere does Laletin disclose what happens at amplifier 54 if power received by the monitor is insufficient.

Accordingly, withdrawal of the rejection of dependent claims 2-4 under 35 U.S.C. 102 as being anticipated by Laletin is respectfully requested.

Rejections Under 35 U.S.C. § 103

The Office Action rejected claims 5 and 6 under 35 U.S.C. § 103(a) as being unpatentable over Laletin in view of Blair et al., U.S. Patent No. 6,700,351, (hereinafter “Blair”). Applicant respectfully traverses the rejection as outlined below.

The Disclosure of Blair

Blair is directed to a UPS system that has a modular design (Blair Abstract). The UPS system includes a battery module which includes a controller that monitors the state of the battery module (Blair at Col. 11, line 1 – Col. 12, line 44). In particular, the battery module is capable of detecting failures within the battery module, and isolating the failed module from the UPS system (Blair at Col. 11, lines 1-15). The battery module communicates with the UPS system using a conventional controller area network (CAN) message passed from the battery monitor controller to the system via a CAN interface bus (Blair at Col. 11, lines 38-44, and Col . 8, lines 18-25).

Blair fails to disclose a battery comprising a “monitor . . . wherein the monitor is adapted to communicate with the external system by interrupting power of received power provided by the external system,” as recited in independent claim 1. Blair communicates between a CAN and other system components using a conventional CAN interface. Blair does not teach or suggest a monitor that is adapted to communicate by interrupting current of received power as recited in

independent claim 1. Rather, Blair uses conventional bus communication techniques for communicating CAN messages between system components.

Claims 5 and 6 patentably distinguish over Laletin in view of Blair

There is no *prima facie* case of obviousness of dependent claims 5 and 6 over Laletin in view of Blair because no combination of Laletin with Blair could teach all the elements of dependent claims 5 and 6.

Dependent claims 5 and 6 depend indirectly from independent claim 1 which recites, in pertinent part, a “monitor . . . coupled to the one or more cells and . . . adapted to receive power for the monitor from the external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system.” As discussed above, Laletin fails to teach a monitor adapted to receive power for the monitor from an external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system. Nothing in Blair cures this defect to teach the subject matter of independent claim 1. Thus, no combination of Laletin with Blair could teach all of the elements of independent claim 1, or of dependent claims 5 and 6 which depend from independent claim 1.

Accordingly, withdrawal of the rejection of dependent claims 5 and 6 under 35 U.S.C. 103 as being obvious over Laletin in view of Blair is respectfully requested.

The Office Action rejected claims 9, 10-13, and 52 under 35 U.S.C. § 103(a) as being unpatentable over Downs in view of Wendelrup, et al., U.S. Patent No. 6,584,329, (hereinafter “Wendelrup”). Applicant respectfully traverses the rejection as outlined below.

The Disclosure of Wendelrup

Wendelrup is directed to a method enabling digital, serial communication over an interface between an electronic device and a battery attached thereto, said digital, serial communication comprising transmission of bytes consisting of a number of bits, each bit being defined by one of a high level and a low level, wherein a leading bit of each byte is of a first one of said high and low levels (Wendelrup at Col. 1, lines 5-11).

Nowhere does Wendelrup disclose, teach, or suggest a “monitor . . . coupled to the one or more cells and . . . adapted to receive power for the monitor from the external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system.”

Claims 9, 10-13 and 52 patentably distinguish over Downs in view of Wedelrup

There is no *prima facie* case of obviousness of dependent claims 9, 10-13 and 52 over Downs in view of Wedelrup because no combination of Downs with Wedelrup could teach all the elements of dependent claims 9, 10-13 and 52.

Dependent claims 9, 10-13 and 52 depend directly or indirectly from independent claim 1 which recites, in pertinent part, a “monitor . . . coupled to the one or more cells and . . . adapted to receive power for the monitor from the external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system.” As discussed above, Downs fails to teach a monitor adapted to receive power for the monitor from an external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system. Nothing in Wendelrup cures this defect to teach the subject matter of independent claim 1. Thus, no combination of Downs with Wendelrup could teach all of the elements of independent claim 1, or of dependent claims 9, 10-13 and 52 which depend from independent claim 1.

Dependent claims 9, 10-13 and 52 are further patentable over Downs in view of Wedelrup for additional reasons.

For example, dependent claim 10 recites a battery “wherein a start of communication with the battery is initiated by the external system by interrupting the current of the power supply.” The Office Action asserts on page 12 that Downs teaches a start of communication with a battery initiated by an external system interrupting the current of a power supply. However, the section of Downs relied upon to support this assertion simply reads “[S]erial numbers stored in memory can be read in the absence of normal power, such as when battery cells 154 are completely discharged.” (Downs Paragraph 0017). Nowhere does Downs disclose that current from a power supply may be interrupted by the external system. A disclosure of a monitor including a memory that may be read from in the absence of normal power in no way discloses or suggests an external system that may initiate communication with a battery by

interrupting current of received power provided by the external system as recited in dependent claim 10. Downs discloses that power may fail due to discharge of battery cells 154, but nowhere discloses that the external system may initiate a interruption in current from the power supply. Thus, Downs fails to disclose an external system that may start communication with a battery by interrupting the current of a power supply as recited in dependent claim 10.

Dependent claims 11-13 and 52 depend directly or indirectly from dependent claim 10 and so also further patentably distinguish over Downs in view of Wedelrup for at least the same reasons as dependent claim 10.

Dependent claim 13 even further patentably distinguishes over Downs in view of Wedelrup. On page 13, the Office action asserts that Downs discloses a “LC-type crystal oscillator (crystal 150).” However, there is no such thing as an “LC-type crystal oscillator.” An oscillator would be based on an LC circuit or on a crystal, not both. If Downs discloses a crystal oscillator 150, it does not disclose an LC-type oscillator as recited in dependent claim 13.

Accordingly, withdrawal of the rejection of dependent claims 9, 10-13 and 52 under 35 U.S.C. 103 as being obvious over Downs in view of Wedelrup is respectfully requested.

The Office Action rejected claims 16-19 under 35 U.S.C § 103(a) as being unpatentable over Downs in view of Bohne et al., U.S. Publication No. 2004/0160210, (hereinafter “Bohne”). Applicant respectfully traverses the rejection as outlined below.

The Disclosure of Bohne

Bohne is directed to reconditioning rechargeable batteries, and more specifically to an adaptor for a non-smart battery that facilitates reconditioning in a smart charger. (Bohne at Paragraph 0002). Bohne discloses a smart battery 102 which contains a memory device 109 that holds battery information, including serial number, type of cell, charging instructions, data parameters, charge usage histogram, date of manufacture, first date of use, and similar information (Bohne at Paragraph 0019).

Nowhere does Bohne disclose, teach, or suggest a “monitor . . . coupled to the one or more cells and . . . adapted to receive power for the monitor from the external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system.”

Claims 16-19 patentably distinguish over Downs in view of Bohne

There is no *prima facie* case of obviousness of dependent claims 16-19 over Downs in view of Bohne because no combination of Downs with Bohne could teach all the elements of dependent claims 16-19.

Dependent claims 16-19 depend indirectly from independent claim 1 which recites, in pertinent part, a “monitor . . . coupled to the one or more cells and . . . adapted to receive power for the monitor from the external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system.” As discussed above, Downs fails to teach a monitor adapted to receive power for the monitor from an external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system. Nothing in Bohne cures this defect to teach the subject matter of independent claim 1. Thus no combination of Downs with Bohne could teach all of the elements of independent claim 1, or of dependent claims 16-19 which depend from independent claim 1.

Accordingly, withdrawal of the rejection of dependent claims 16-19 under 35 U.S.C. 103 as being obvious over Downs in view of Bohne is respectfully requested.

The Office Action rejected claims 24, 25, and 27-30 under 35 U.S.C § 103(a) as being unpatentable over Downs in view of Blair. Applicant respectfully traverses the rejection as outlined below.

Claims 24, 25, and 27-30 patentably distinguish over Downs in view of Blair

There is no *prima facie* case of obviousness of dependent claims 24, 25, and 27-30 over Downs in view of Blair because no combination of Downs with Blair could teach all the elements of dependent claims 24, 25, and 27-30.

Dependent claims 24, 25, and 27-30 each depend directly from independent claim 1 which recites, in pertinent part, a “monitor . . . coupled to the one or more cells and . . . adapted to receive power for the monitor from the external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system.” As discussed above, Downs fails to teach a monitor adapted to receive power

for the monitor from an external system and wherein the monitor is adapted to communicate with the external system by interrupting current of received power provided by the external system.

As discussed above, Blair also fails to disclose a battery comprising a “monitor . . . wherein the monitor is adapted to communicate with the external system by interrupting power of received power provided by the external system,” as recited in independent claim 1. Thus, nothing in Blair cures the defect of Downs to teach the subject matter of independent claim 1 and no combination of Downs with Blair could teach all of the elements of independent claim 1, or of dependent claims 24, 25, and 27-30 which depend from independent claim 1.

Accordingly, withdrawal of the rejection of dependent claims 24, 25, and 27-30 under 35 U.S.C. 103 as being obvious over Downs in view of Blair is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762.

Respectfully submitted,
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